



## Memorandum

**To:** Weldon Collier, Program Planning Coordinator, FDACS  
Thomas Frick, FDEP  
Dr. Terril Nell, IFAS

**From:** Mac Hatcher, Senior Environmental Specialist

**Date:** February 2, 2011

**Subject:** Request for input on a proposed Collier County Fertilizer Ordinance

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### Background

Local fertilizer control ordinances have been adopted by many local governments to limit nitrogen and phosphorus pollution of water resources, prevent nuisance algal blooms, and to meet water quality standards. Fertilizers usually contain nitrogen (N) and or phosphorus (P) and are intended to stimulate plant growth. Movement of the N or P from the soil to surface waters can also stimulate aquatic plant growth. Algae blooms can result from increasing N and or P concentrations and can adversely affect surface potable water supplies, cause fish kills, or create nuisance conditions. In Collier County the worst example of adverse effects of algae blooms occurred in Lake Trafford where in 1996 massive fish kills resulted from algae blooms.

State legislation in 2009 requires local governments with surface water nutrient impairments to adopt at least the "Model Ordinance for Florida-Friendly Fertilizer Use on Urban Landscapes". The keystone provision of the ordinance is training for commercial fertilizer applicators because studies confirm properly applied fertilizers have minimal impacts to water quality. Local governments may adopt more stringent provisions if they demonstrate that "as part of a comprehensive program to address nonpoint sources of nutrient pollution which is science-based, and economically and technically feasible, that additional or more stringent standards than the model ordinance are necessary in order to adequately address urban fertilizer contributions to nonpoint source nutrient loading to a water body" (FS 403.9337 (2)a). Collier County has 2 water bodies that were designated impaired for nutrients by the Florida Department of Environmental Protection (FDEP) in 2008 and Total Maximum Daily Loads (TMDL) were established. Lake Trafford was already being dredged to alleviate conditions caused by the accumulation of organic sediments when the TMDL was set. The [Lake Trafford TMDL](#) requires an N load reduction of 60 % and a P load reduction of 70 % from the nonpoint source contributions to the lake. The other impaired water body is the [Gordon River Extension](#) (GRE) and this TMDL was set at 0.74 mgN/l based on several "reference" sites. (The Lake Trafford TMDL will be difficult to accomplish and since it is expressed as a load reduction it is difficult to compare to the data available.)

The GRE TMDL target of 0.74 mgN/l is very low and will be extremely difficult to attain in an urban area. Due to this unusual need to control surface water N concentrations Collier County is considering the adoption of more stringent standards than proposed in the model ordinance. Specifically Collier County is considering an application prohibition from June 1 to September 30, a reduction of annual loading to 4 lbs N / 1000 sq ft / year, the use of fertilizers containing 50 % or greater slow release nitrogen, and a buffer of at least 10 ft. Collier County is seeking input from the Florida Department of Environmental Protection (FDEP), Florida Department of Agriculture and Consumer Services (DACCS), and the University of Florida Institute for Food and Agricultural Sciences (IFAS) on these proposed more stringent provisions of the model ordinance.

In addition to the documents cited in the memo I have attached copies of a couple of support pieces: Southwest Florida Regional Planning Council 11/18/2010 letter to Mike Thomas, FDEP, regarding the 2010 FDEP Model Ordinance for Florida-Friendly Use of Fertilizer on Urban Landscapes; Collier County Fertilizer Ordinance Support Letter. 12/10/2010. Conservancy of Southwest Florida.

### **Ordinance Consistency**

In addition to the unusual need to limit N discharges to surface water the adjacent local governments, the City of Naples and Lee County, have both adopted local fertilizer ordinances with standards that are more stringent than the model ordinance. Both of these jurisdictions have included wet season blackout periods (June –Sept.), reduced annual N load (4 lbs/1000sqft/yr), at least 50 % slow release N, and 10 ft protection zones for water bodies. In public workshops both the Collier County Environmental Advisory Council, and Collier County Planning Commission suggested these provisions which are also supported by the Conservancy of Southwest Florida be included in a Collier County Ordinance. The Southwest Florida Regional Planning Council recommends all of these except the load reduction. Consistency with adjacent ordinances would facilitate education and training of fertilizer applicators.

### **Local Conditions**

Researchers have demonstrated that fertilizers applied at the recommended application rates have minimal discharges of inorganic N even in south Florida's sandy soils. However the TMDL that has been set for the Gordon River Extension and other southwest Florida streams (canals) will be difficult to meet in urban areas. Typical runoff concentrations for native upland land covers and undeveloped areas that receive no fertilization are 1.15 mgN/l and residential and commercial runoff waters are between 1.18 and 2.40 mgN/l in Florida (Harper and Baker 2007). Standard wet detention stormwater treatment systems are estimated to have a mean N treatment efficiency of 37 % (Harper and Baker 2007) which would barely provide sufficient nitrogen removal from the undeveloped upland areas to meet the GRE TMDL and would be inadequate for most urban land covers. In this setting, the addition of any nitrogen from fertilizers is problematic. Researchers from IFAS have shown that runoff from saint Augustine turf areas maintained with recommended fertilizer applications have very little runoff. However there is leachate from the turf that has inorganic nitrogen concentrations averaging 0.21 mgN/l (Erickson, et al. 2007). This leachate inorganic nitrogen concentration is higher than the mean inorganic nitrogen concentration in the impaired GRE (0.1 mgN/l). The turf research did not assess the amount of organic nitrogen in the leachate or predict how much of the nitrogen leachate would enter the surface waters. However, with the TMDL set at 0.74 mgN/l there is support for the assumption that the recommended nitrogen application rates will contribute to further pollution in local waters. The more stringent provisions adopted in the City of Naples and Lee County fertilizer ordinances are intended to reduce the total quantity of nitrogen applied to landscapes, reduce the likelihood of leaching during the summer rainy season, and reduce the likelihood of misapplication by requiring a full 10 ft buffer to water bodies.

## **County Nonpoint Program**

The proposed restrictions to fertilizers will add to Collier County's non point source nutrient control strategy. Initial county efforts to increase local protection set sludge application standards and set up a land application inspection program. The county has litter, trash and pet waste control ordinances. Collier County in concert with the state has been increasing surface water protective measures since 1989. Collier County has relied primarily on state and federal agencies for wetland and surface water management permitting and water quality certification. Open space and native habitat preserve standards were increased to benefit wildlife and water resources. The current Landscaping Requirements include provisions and encouragement for native plant retention, buffering requirements (LDC 4.06.01), and upland buffers to wetlands (LDC 3.05.07). In 2002 the county adopted interim watershed standards requiring 150% of the South Florida Water Management District (SFWMD) water quality treatment standard, and stage and flow compensation assessment. Water quality concerns for the Gordon River Extension basin were first addressed in the 2001 Phase IV Basin Study. The [Gordon River Water Quality Park](#) developed in 2010 is intended to provide some treatment to an area that was platted prior to surface water treatment requirements so the runoff has very little storm water treatment. In addition to the regulation and surface water projects the county and [Big Cypress Basin](#) (local South Florida Water Management District) have sponsored educational programs and supported the [County Agricultural Extension "Florida Friendly" programs](#), and the [Collier Soil and Water Conservation District Mobil Irrigation lab](#). The County and the Big Cypress Basin have been improving the canal systems capacity to store, rather than just drain, which improves recharge, nutrient assimilation, and evapotranspiration.

Collier County implemented its National Pollutant Discharge Elimination System (NPDES) program in 2003. The county [NPDES program](#) includes runoff control inspections of construction sites, small quantity generators of hazardous waste, street sweeping, non point source education, and public outreach. Part of the NPDES education outreach has been the support of the [Project Greenscape's Florida Friendly BMP training at the Rookery Bay National Estuarine Research Reserve](#). The ongoing Watershed Management Plan studies are evaluating low impact design standards to increase the effectiveness of the stormwater management strategies and will be finalized in 2011. The SFWMD adopted a Naples Bay Surface Water Improvement Plan in 2007. Many of these programs are relatively new and the nonpoint controls may not have been in place a sufficient length time to affect the data used to assess the water quality of the GRE.

## **Literature Considered**

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